THE

BOSTON MEDICAL AND SURGICAL JOURNAL.

VOL. LXI. THURSDAY, SEPTEMBER 22, 1859. No. 8.

DIPHTHERITIS, OR THE MEMBRANOUS DISEASE; COMMONLY CALLED MEMBRANOUS CROUP; AS IT APPEARS IN ROXBURY AND THE VICINITY OF BOSTON.

[Communicated to the Boston Society for Medical Improvement by B. E. COTTING, M.D., Associate Member, and transmitted for the Boston Medical and Surgical Journal.]

"ANOTHER thing which prevents some practitioners from knowing the futility of their own prescriptions, and what Nature left to herself can do, is that they never leave Nature to herself. The moment they are called, they fall to work with their draughts, juleps, and apozems, and persevere with unrelenting assiduity till the disease terminates one way or the other; if the patient recovers, the medicine gets the credit; if he dies, the disease is thought to have been incurable."—*Med. Sketches*, by JOHN MOORE, M.D. Lond., 1788.

A MEMBRANOUS disease of the mucous tissues, peculiarly fatal when affecting the air-passages, has been known from time immemorial. Evidences of this knowledge may be found under "a vast variety of names" in the works of older authors, and we have the best authority for the assertion that "it may reasonably be doubted whether the ancients were not fully as well acquainted with diseases of the fauces and windpipe as the moderns are." This vagueness in names, "which have fluctuated perpetually in meanings ascribed to them," pervades also more recent descriptions, to such a degree that the number of new appellations has become even greater than that of the old. From the Prognostics of Hippocrates down to the late harangue of Trousseau, these names have represented symptoms, lesions, and localities, commingled in almost inextricable confusion. Singularly enough, the term most prevalent with the ancients, and that almost universally adopted within the last century, so far as they have any significance in themselves, indicate inconstant or unimportant symptoms merely, common to other complaints, or seldom occurring in true uncomplicated membranous disease. The former has been obsolete for a long time; the latter,* now the cause of much violent and misdirected treatment, should be restricted to a single form of disease, or else discarded from use altogether.

Of all these appellations, ancient and modern, that given by Bretonneau, about thirty years ago, would have been the most worthy of universal adoption, had not he and his followers persist-

* *Croup:* a vulgar Scotch word, first introduced into medical literature by F. Home, 1765.

ed in classing under it various kinds of "angina"*—thereby making it as vague as any of its predecessors. At first this term met with some little opposition and ridicule; subsequently it fell into apparent neglect, but now seems to be starting afresh into general favor. Such, however, is the professional tendency to extremes, that, from present indications, all the acute diseases of the throat and air-passages, however dissimilar, will before long have a place prepared for them under the expansive title of Diphtherite, or its English corruption, Diphtheria.

The original Greek word,† far superior in all respects to any of its recent derivatives, certainly indicates the peculiar characteristic of membranous disease; and perhaps it is not too late to hope that this or some other appropriate term may sometime hereafter be received and restricted to that disease alone. In the momentary indulgence of such a hope, the following remarks will be confined as far as possible to the membranous disease, commonly called in this vicinity "membranous croup"—a true diphtheritis. The conclusions to be offered are founded on those cases only where the peculiar membrane was obtained and carefully examined, after spontaneous ejection in cases of recovery, or by cadaveric autopsy.

The membranous disease is an affection, the result of a distinct influence, giving rise to characteristic symptoms or outward manifestations, through which, as is the case with other diseases, it becomes known to us. These symptoms are both constitutional and local. The constitutional may be so severe and so rapidly developed as to destroy life before the local have become a source of danger; or they may be so slight as to be overlooked. The local, also, may have the violence, though not the other characteristics, of rapid inflammations, or their existence may even be a matter of doubt until made evident by obstruction caused by the membrane fully formed.

It is a self-limited disease; having its beginning, middle, and ending, as marked and uniform in progress, and as uncontrolled by any means now known, as variola, measles, or any other disease that can be cited. It is as distinct from all other diseases of the mucous tissues, with most of which it has been confounded, as measles is from scarlet fever, which two were so long considered identical.

The formation of the membrane, a constant condition (as constant as the eruption in variola‡), does not always correspond in amount to the severity of the other symptoms, general or local—in this also resembling the diseases alluded to. The membrane may be only a thin film, or it may have the thickness and toughness of mois-

* "On appelle encore communément *Angine* toute affection inflammatoire plus ou moins intense de l'arrière-bouche, du pharynx, du larynx, ou de la trachée-artère." Nysten, 1854, p. 73.

† Διφθερίτις, fem. Διφθερίτις, *covered or clad in soft skins*, a term borrowed from the stage. Hence, by easy construction Νοσος ἡ διφθερίτις, the membranous disease.

‡ Membranous disease without the membrane would be as great an anomaly as "variola sine variolis."

tened parchment. It may cover only a very limited space, or it may occupy the whole mucous surface of the organs attacked. It usually forms gradually, at first a very thin layer (which may be likened in appearance, and adhesiveness to the surface beneath, to the first coat or "priming" of white paint on a pine board); then this layer becomes thicker and tougher day by day, until it reaches its limit. Its progress, so far as it has any, is from above downward, and any deviation from this rule is rather apparent than real. From the outset, however, it generally covers all the surface that it ever will during the attack, increasing only in density. Its thinness may prevent its being early noticed on parts within sight, though clearly visible at a later period of the disease. During its formative stage it remains firmly adherent to the mucous tissue beneath it; so firmly that it is impossible to remove it, even by the most careful dissection. As soon as this stage is completed, usually in four or five days from the onset of the disease, the membrane begins to loosen from its foundation, and soon becomes entirely separated. This is a process as natural as the separation of a scab from a sore; and if a portion be artificially removed by violence or otherwise, another forms in its place, as a new scab succeeds to one prematurely detached. When loosened spontaneously, its creates sufficient irritation and cough to cause its expulsion. It is sometimes cast off without observation, while at others its ejection is attended with convulsive efforts of the greatest severity. Harsh attempts, by emetics, probangs, and the like, to dislodge the membrane before its natural separation, are often accompanied with fearful risks; and, could the proposed object be effected, it would involve a re-formation—more to be dreaded in the exhausted state of the patient than its first appearing.*

The membrane itself is of a peculiar structure—a tissue of elastic fibres longitudinally arranged; the fibres smooth and in no degree transversely striated. Great elasticity is one of its characteristics. It is inorganic in its nature, or so much so that it never tends to organic union with the subjacent tissues. This membrane differs essentially from the lymph or plastic secretions which encrust the tongue, tonsils, and fauces, in many acute disorders and aphthous diseases of the parts; and which may be condensed and removed in filmy shreds, or even generated, by the application of caustics or strong acids. These shreds sometimes greatly resemble the membrane, but ordinarily they can be as readily distinguished from each other by experienced observers as the fabrics of linen and cotton can be by those who deal in them. Like these fabrics, however, they may occasionally require minute and even microscopic examination to determine their true character.

* Sometimes, especially when the disease is confined chiefly to the larynx, after frequent premature efforts to dislodge the membrane and the expulsion of some small fragments, an irregular surface, with an appearance somewhat similar to ulceration, may be noticed *post mortem*.

Membranous disease is a disease of childhood. But Nature knows no abrupt limitations. It occurs frequently in infancy, and is not unknown in advanced age. In infancy, however, the membrane seldom descends into the larynx, and therefore rarely becomes a source of danger. In adults, on the other hand, formations of a membranous character in the pneumonic portions of the bronchi are more common than generally supposed, but, being thrown off without difficulty, escape notice and are therefore supposed not to have existed. Their appearance, generally, is less leathery when from these parts, and, on that account, less liable to attract attention. When, on the other hand, such formations invest the trachea and larynx of an adult, they often become remarkably thick, firm, and adherent, and render a fatal result exceedingly probable.

Membranous disease is not very infrequent. In Roxbury, a city of now nearly or quite 20,000 inhabitants, during the past eight years, according to the public register, there have been 71 deaths from "croup." This may be considered about the true number of deaths from membranous disease, for although some may be so recorded which occurred from other causes, yet it is quite as probable that as many died of this malady but were classed under other names, since the complaints commonly called "croup" in this vicinity are seldom or never fatal, unless of a membranous character. The number thus recorded gives about 1 death for every 40 from all causes; and, on an average, 1 in each year for every 2,200 inhabitants. The yearly average is 9—the least number being 4, and the largest 13. Of these 71 deaths, 1 only occurred in the month of July and 1 in August. In November there were 12 deaths; in February, 11; in April, 10.

Although the proportion of deaths from this disease in this city has in some years equalled, or even exceeded, that of Paris in the years when it was there called epidemic, it has never been considered epidemic here; nor has it been notably connected with any other epidemic.

We have seen no evidence that it is contagious. Although several cases have sometimes occurred at the same time in the same household, the attending circumstances have been such as to preclude the probability of its having been communicated from one to another.

Membranous disease occasionally supervenes upon other diseases — scarlet fever, measles, and the various diseases of the throat. In this respect, it resembles some other affections (erysipelas, for example) which appear spontaneously and alone as a general rule, but sometimes accompany, or become complicated with, other complaints. According to foreign accounts, it is a frequent attendant on severe or malignant anginas, as they term them, and perhaps common inflammatory diseases of the throat. Such is not the case in this vicinity.

Whenever membranous disease occurs as a complication with any other acute or inflammatory affection, a fatal result is almost certain.

It requires an acute and practised observation to detect membranous disease in the first hours of its commencement. So slight are its symptoms that parents frequently omit to send for their physician until the third or fourth day, and then often with hesitation, lest he should think the attendance unnecessary. At this later stage of the disease the patient usually has an anxious expression of countenance and manner, and appears oppressed. He labors in breathing—the prolonged inspirations and expirations being of nearly equal length and difficulty. But the peculiar closeness or muffled sound of respiration is the principal diagnostic sign. It is very difficult to describe this sound. It can only be learnt by attentive and frequent observations. Yet it is more reliable and therefore more valuable than all other diagnostic signs. Once in a while it can be detected before any other indication of the disease is manifest, say in the first two or three hours. Parents have, in rare instances, detected it thus early, after having lost one or two children by the same disease, while the fatal sound was still ringing in their ears. The muscular movements of the face, neck, and chest, concerned in respiration, assume a peculiar laboring appearance or expression, which becomes more marked as the disease advances. But the difficulty of breathing is not always in proportion to the amount or thickness of the membrane, for this difficulty is much influenced by the more or less disabled condition of the muscles and other appendages of the glottis. When in other respects the disease makes equal progress, the difficulty of respiration becomes alarming in proportion as the membrane is very thick and abundant. The cough, if any, and the voice, when not stifled, partake of the characteristic sound of the respiration. But the patient speaks as seldom as possible, and then only in a whisper; and is not often troubled with cough until some portion of the membrane has begun to separate. When this separation has somewhat advanced, the paroxysms of coughing become more and more frequent, and resemble in a marked degree the ordinary efforts to dislodge a foreign substance, rather than a common cough.

The pulse is not sensibly altered at first, but becomes more disturbed and frequent as the disease advances, and at last is very small, feeble and rapid. Where the disease is more constitutional than local, the pulse is more decidedly affected from the outset.

The appearance of membrane in the throat, or on the tonsils, is only an indication that membranous disease exists in and involves these parts, but is no sure sign that it includes other places in the attack. Nor is the absence of membrane within sight sufficient evidence that the disease is not present, for it may have seized upon the parts below only. The tonsils and throat are often, in

other diseases, covered with plastic or fibrinous products, which on a hasty glance may be mistaken for membrane, but which in reality consist of other and variously developed materials, and must be regarded as essentially different from the croupous. These plastic, non-croupous exudations readily condense into shreddy sheets on the application of caustics or acids, and, brought up upon a probang, have been the source of many a wrong diagnosis. The tongue is often, but not uniformly, furred in membranous disease. There is generally no appearance of inflammation of the throat in uncomplicated cases. If there be tenderness about the neck, it is usually slight. Pain is not often complained of; nor is swelling an ordinary symptom. The cervical and other glands are seldom affected. The appetite often continues, and deglutition is comparatively easy. Sometimes the patient appears exceedingly tranquil and conscious, though laboring to exhaustion for breath; at other times he is restless, frequently changing his place and position. The whole surface of the body is often drenched in perspiration. Coma sometimes supervenes. Suffocation, often so imminent toward the last, sometimes takes place very suddenly. More frequently, the patient dies exhausted, worn out by the exceeding difficulty and unremitting labor in breathing.

The disease has not the brevity nor rapid progress generally attributed to it—its earlier stages being overlooked or disregarded.

On the approach of nightfall, the symptoms become aggravated, or rather attract more attention through the surrounding stillness. The careful observer will have noticed, however, that the disease has not in reality abated during the day.

In the last named, as in almost every other respect, membranous disease differs essentially from that noisy breathing, or rather cough, so frequently attending catarrhal affections of the fauces and glottis, and which by its hoarse, or roup-like sounds, gave origin to the popular name of *croup*. This kind of "croup," as it is called (improperly, if the same term must be applied to membranous disease also), is only a harmless symptom of another disorder. Its noisy demonstrations and strangulating sensations are often exceedingly alarming to the inexperienced, but it derives most of its terror from being confounded with membranous disease, with which it has little or no affinity. The danger, more or less, to the sufferer is only that which the "cold" or catarrh would give rise to without this attending disturbance. Children are said to be *subject to it*, which expression ought to satisfy one of its innocuous character. It occurs mostly in the night, suddenly arousing the patient from sleep, and will soon pass off if left to its own course. It is generally, but without apparent reason, attributed to spasm of the glottis. The conjecture of palsy is more plausible. It is rather due to the catarrhal or other irritation, encroaching upon and stiffening the parts. The paroxysm is oftentimes brought on by the irritation being aggravated at the moment

by dryness from breathing through the partially open mouth—the nostrils having become obstructed by catarrhal secretions. If this "croupy" symptom need any special treatment at all, which is more than questionable, thin mucilaginous or aromatic liquids will prove sufficient. The usual practice of parents and physicians to attack it with great energy and "tumultuous rapidity" by emetics and other harsh agents, is entirely uncalled for, and may prolong into days what would of itself continue only a few hours—to say nothing of the unnecessary struggles and suffering of the patient. The only excuse for such violence is the fear that the complaint may "run into" the membranous disease—a thing which never happens. The sooner the two receive names as unlike as they are in nature, the better it will be for science and humanity. At any rate, the violent treatment should no longer be tolerated, for to no disorder are the words of Sydenham more applicable, that "it often happens that the character of the complaint varies with the nature of the remedies, and that symptoms may be referred less to the disease than to the doctor."

Without a due recognition of its true nature and laws, membranous disease has hitherto been treated, for the most part, most distressfully—by bleeding, leeches, cupping, blisters, sinapisms, mercurial and drastic purgatives, by emetics, often of the harshest kind, and lastly by severe cauterizations. That recovery takes place in spite of such treatment only proves how much mortal flesh may endure, and how much less dangerous the case may be than apprehended. Fortunately, most of these agents are becoming practically unknown to the new generations of practitioners, though there is still far too much to be unlearned. One by one the agents alluded to have been gradually discarded by influential individuals as having nothing but their power of disturbing the constitution, and of weakening the already weakened body, to recommend them. Emetics, once considered the "divine remedy," and last to be laid aside, are now only resorted to by those who practise upon the traditions of the elders. Emetics cannot arrest the disease; cannot dislodge the membrane until it has separated and is ready to be cast off by a natural process, nor even then without dangerous risks. They often throw the sufferer into a condition of lamentable debility. Their use should be avoided.*

For some years past the application of caustics has been the general fashion, and their indiscriminate use the rage even, with the more zealous and incautious believers in their efficacy. Whatever these agents may do for other diseases, in membranous disease they can be little else than an injury. Being generally thrust into the pharynx only, they do not reach the seat of danger. The commotion

* An old friend, and senior by quite a number of years, on reading the foregoing pages appended the following: "True description; my memory, my disturbed conscience so tell me. May I be forgiven for the calomel, the antimony, the ipecac, and the squills, I have given. I promise to afflict the innocents no more with them."

necessarily attendant on their application, to say nothing of the local burn, greatly increases the risk of the patient. When they are applied by a competent hand, on an instrument small enough to enter the orifice,* and are actually forced within the verge of the glottis, the struggles and convulsions of the patient are violent and uncontrollable, so that dangerous accidents not infrequently happen, and even a fatal result may immediately follow the operation. Their use is deprecated by those whose great experience, and observation of their effects in this disease, entitle their opinion to high confidence. Our own observation, the private testimony of many practitioners, and the publications of numbers of others, including advocates of the treatment, furnish so little evidence of good results† from the use of caustics in membranous disease, while, on the other hand, the danger of evil and of even fatal consequences is so manifest, and the suffering so certain and unavoidable, that it would seem in the light of science rashness and folly, and in the eye of humanity unmitigated cruelty, to persist in their employment.

"I fear not to assert," says Trousseau, "because it is my entire conviction, that there would be vastly more success by tracheotomy if, as sometimes happens, children could reach the croupal suffocation entirely untouched by these kinds of treatment, which have no other result than to debilitate them." This is undoubtedly true. It is also true, and needs but the trial for any one to be convinced of it, that children would be vastly better able to endure the severities of membranous disease, and to pass through its most fearful stages to ultimate recovery, if they could be left undisturbed by such dangerous kinds of treatment as we have just spoken of.

What, then, is the best treatment? Certainly that which, from the outset, will best sustain the strength, soothe the suffering, and, if possible, diminish, or at least not increase, the labor or the number of respirations, nor add to the struggles of the patient. Mild and nutritious diet, including, if possible, such articles as the patient willingly accepts, is to be preferred to abstinence, cer-

* In children the length of the glottis (by frequent measurements) is from five sixteenths to three eighths of an inch; and its width, at the widest part, not over one eighth. Age, under 12 years, makes but little difference in the size of the glottis. In disease the dimensions of the orifice may be diminished by membrane, by inflammation, or by œdema, &c. The trachea is usually, at the period spoken of, less than half an inch in diameter. Yet, notwithstanding the position, size, diseased state of the parts, and other difficulties, reporters of cases speak of passing through the glottis and larynx into the trachea probangs charged with the strongest solutions of nitrate of silver, as though it were a thing of the greatest ease. We are even told of a sponge probang, of sufficient size to enlarge mechanically the calibre of the air-tube, having been, with revivifying results, passed repeatedly down the whole length of the trachea of a child then in a state of asphyxia, with purple face and lips, cold extremities, and clammy surface—and the profession coolly asked to believe it!

Post-mortem indications (as sometimes reported) of caustic having passed into the trachea are probably due, when really existing, to an overflow into the cleft of the glottis, open and stiffened by disease, from a saturated sponge compressed on entering the pharynx.

† The passing of the probang into the pharynx, by removing the accumulated mucus, occasionally seems to afford relief for the time being, but these appearances are very deceptive. The disease generally soon becomes more desperate in consequence of the interference. If by rare chance the already loosened membrane be ejected soon afterward, the probang gets the credit of it, most undeservedly.

tainly to a stimulating course. The inhalation of watery vapor, by an inhaler or other practicable expedient, is often, not always, very agreeable; and if it is not very effective, is at least without objection.* A warm fomentation, or better still a warm emollient poultice, covering the whole anterior half of the neck, is probably of service. But above all, anodynes, sufficient to subdue restlessness and ensure quietude, are the most important agents. The particular form is of little consequence. Dover's powder, or an equivalent syrup containing the strength of a grain of opium and a grain of ipecac to the ounce, is a very convenient form. The ipecac, however, is not important. Mucilaginous drinks are also generally acceptable. Such treatment, as old as the history of medicine, and incidentally mentioned with approbation by almost all writers, ancient and modern—such treatment, with that all-important care usually included in the phrase "good nursing," will increase the chances for a happy termination.

So much for general or medical treatment. As for tracheotomy, alternately advocated and decried in times past, and to which attention has of late been again directed, and which, Trousseau its present great advocate says, does not cure but only hinders from dying, it is difficult to speak as one would, without danger of misapprehension. The operator should certainly bear in mind that the disease is constitutional as well as local, and not merely an obstruction to respiration, that death often takes place even when the glottis and larynx are freely open, that the apparent revival on the first opening of the trachea is by no means a sure forerunner of resuscitation, that there are great and obvious reasons against any surgical operation during an acute disease, that the operation itself has its own peculiar dangers which are far from being trivial, that it is not safe in individual cases to reason on the reports of extraordinary restoration after hope, if not life itself, was extinguished;† and further, he should remember that instances are not very uncommon of spontaneous recovery in desperate cases, after all treatment had been abandoned, and an operation, offered as the only chance, had been refused by the parents; and, still further, that if "they order this matter better in France," a large portion of their reported success must be attributed to different forms of disease being included under one name, and to hospital attendance, appliances and after-treatment, rarely attainable in private practice.

It is time for the operation, if ever, when "the countenance becomes blue or extremely pale, when the inferior part of the sternum is enormously depressed during inspiration, when the

* The popularity of this practice in this vicinity, ten or fifteen years ago, was doubtless as much due to the good effect of abstaining from violent measures, as to any positive efficacy in the method itself.

† As for instance Berard's almost incredible case, where the heart did not beat until fifteen minutes, nor respiration return until fifty-seven minutes after the trachea was opened.—*Am. Jour. Med. Sciences*, 2d Series, vol. iii.

vesicular murmur is totally absent in the lungs, when the pulse becomes frequent and small, when a sort of quietude succeeds to efforts of the most violent character, when, in fine, an indescribable expression of countenance gives unmistakable signs of approaching dissolution."*

Tracheotomy having been decided upon and performed, the after treatment devised and recommended by Trousseau† and his confreres in Paris, and improved upon by Dr. George H. Gay‡ and other members of the Boston Society for Medical Improvement, should be followed, and adapted to the exigencies of each particular case.

The introduction of calomel, caustics, and other agents through the wound, though suggested and advised by some high authorities, needs further trial and proof to warrant acceptation.

In estimating the probability of recovery in any single case, there are many things to be considered. In infants, the disease, occupying perhaps only the posterior nares or the pharynx, may be of little moment. In children, the constitutional symptoms may be a greater source of danger than the membrane. The location of the membrane may endanger life by suffocation, although the extent of surface attacked may be very small. The amount of surface involved may be such as to destroy life even after the whole of the membrane has been spontaneously thrown off. Again, the membrane may be of such amount and in such position as to cause so great an obstruction to free respiration (though short of suffocation) that the excessive exertions in breathing, continuing through several days and nights without remission or the possibility of the least rest, may exhaust all the vital power. This is not an infrequent termination. The patient dies like an overtasked animal, and there is reason for believing that a change takes place in the arteries, not unlike that when an animal is driven to death. As it is very difficult if not impossible to ascertain very accurately the actual condition and extent of the parts involved in the disease, a favorable prognosis must be assumed with greatest caution.

In conclusion, from personal experience, we should say that the chance for a favorable termination of a case of membranous disease occurring in childhood, is about one in three. If anything better than this is to be hoped for in the future, may it not be from a much less perturbating treatment than that which is now generally adopted, with perhaps an occasional resort, in an extreme case, to tracheotomy, with its improved after management?

---

* Trousseau, Rapport, Nov. 2, 1858, p. 25, l. 18, &c.

† A canula of a diameter superior to that of the glottis; a double-tubed canula; a neck-cloth, of good, thick materials, obliging the patient to inhale the air from around the jaws, and not a mere piece of muslin; a warm temperature, and a proper moisture of the air; cauterization of the lips of the wound; lastly, supporting the patient by food, &c.—Trousseau, op. cit., p. 58.

‡ See published Records and Papers of the Boston Society for Medical Improvement, 1858-9, in Boston Medical and Surgical Journal, Vol. LIX., pp. 413, 417, 509.

Such is a brief statement of some of the results of my own observations in a very large number of cases, during a period of nearly twenty-five years. In the course of these observations I have repeatedly seen the membrane covering only the posterior nares and pharynx in infants, and once in a pair of nursing twins, both at the same time. I have seen in older children the membrane beginning below the larynx, and extending into the most distant divisions of the bronchi. In one of such cases, the patient, aged six years, while sitting up in bed and talking confidently of going to school, suddenly fell back and expired; the top of the membrane, which was loosened throughout, having fallen in, and completely closed up the orifice. I have seen a child, at the age of five and a half years, die on the sixth day of the disease, with the membrane in the trachea and branches, and only the slightest film in the larynx—worn out by the labor of breathing, without the failure of a due supply of air, and without the usual signs of suffocation—being simply exhausted to death. Ten days afterward I saw the younger sister die on the third day of the disease, with only a thin film of membrane extending less than an inch below the larynx, without being an obstacle to the free admission of air. In this case, as in some others I have seen, the membrane resembled a thin coat of white paint, and could not be removed by dissection. In these last mentioned cases, the constitutional disturbance was intensely severe. I have seen several, who had thrown off all the membrane, to the amount of a wineglassful or more, sink away and die without any adequate cause that a post-mortem could reveal.

So stealthy is the approach of this disease, and so unlike preconceived notions its progress, that in nine tenths of all the cases that I have seen, or known of, the nature of the disease was not suspected by the parents or friends until announced by the medical attendant. I have seen a child, of six to seven years, playing in the melting snows of spring, within twelve hours of his death, the parents entirely unsuspecting dangerous disease (though the child had been unwell for several days), and indignantly repelling the physician who intimated that a fatal result was impending. While writing this sentence, I am attending a little boy, of six years, now convalescent, having ejected spontaneously a large amount of membrane eight days ago, in whose case the parents, very intelligent people, have not to this time suspected "croup," which they hold in great dread. In another case, where their fears had been aroused and their ears were still vibrating with the sounds pointed out to them in an older child then lying dead in the house, the parents thought they heard the fatal breathing and summoned me at once. It was early morning; I listened for more than half an hour at a time, and still could not be certain. Treatment, however, was commenced. Before forty-eight hours, the disease was sufficiently manifest, and went on its usual course.

The crisis was past with ejection of the membrane seven days after our first observation. The patient had not strength enough to rally, but sank exhausted on the fourteenth day.

I have seen four cases, with three recoveries, in the same family, at the same time. This family had lost a child of the same disease some years previously, in the country, yet did not recognize its recurrence as "croup," until it was told them.

I have performed tracheotomy, unsuccessfully, when the membrane was found not to extend below the larynx, and again where it involved all parts, even to the bronchi. I have seen recoveries under almost every variety of treatment. I have seen more than one recover in rooms filled with the steamy atmosphere of cooking stoves; while all so situated seemed to suffer less than others in drier apartments. I have seen several recover, where no remedial measures, real or pretended, were adopted; and still others, where only infinitesimals, equivalent to nothing, had been prescribed—even after abandonment, as hopeless, by the regular physician.

In all these cases, and in all others on which the foregoing remarks have been based, the peculiar membrane was obtained and examined. Those cases in which the membrane was thrown off or found, and therefore known to exist, should alone be received and allowed to influence any discussion on this disease.

After these opportunities of observation, and such an experience in the management of this disease, I cannot but express my conviction that if the mild, rational treatment, and principles of management above recommended, were generally adopted, the profession would be a good deal surprised at the favorable result of the experiment.

FRACTURE OF THE FIFTH CERVICAL VERTEBRA.

[Communicated for the Boston Medical and Surgical Journal.]

MESSRS. EDITORS,—I send the following case for insertion in the JOURNAL, if you think it worth the trouble of preparing for the press.

Mr. Charles Tirrell, of this town, aged 53, healthy, weight about 160, fell from a load of hay July 26th, striking upon the back of his head, neck and shoulders. He was in the town of Minot, three miles from home, at the time. I saw him in about one hour. He was lying upon his back, on a bed, with his body completely paralyzed. He would not allow himself to be turned for the purpose of examining the spine, because, he said, it would hurt his neck, which was a little painful. His mind was clear and rational. Pulse 55. Body rather cold. Urine retained, and erections. Dr. Alonzo Garcelon, of Lewiston, was sent for, and an examination made, which disclosed a fracture of the fifth cervical vertebra,

either through the laminæ or at the intervertebral notches. After a few days, he recovered an imperfect sense of feeling in his arms, and on the chest as low as the sixth ribs, and could move his arms a little. He remained in a calm, happy state of mind, conversed freely, made his will, would tell stories, and sometimes laugh heartily (but that, he said, hurt his neck), until a day or two before he died, which was on the morning of Aug. 22d—twenty-seven days after the injury. He retained his reason to the end of life.

CONDENSED RECORD.—*First week after Accident.* Pulse about 50. Body warm. Appetite good. Urine scanty. No dejection, except by enema. *Second and third weeks.* Pulse got up to 70. Tongue coating. Appetite failing. Dejections loose and frequent. Urine abundant and dribbling away, leaving a large quantity of bloody mucus in the bladder, which by the use of injections was drawn off with the catheter. Heavy, dark coat on tongue. *Fourth week.* Pulse about 80. Appetite gone; great emaciation; dejections frequent; urine dark, with sediment like coffee grounds; surface cold and hot alternately; at times has a sense of suffocation. Quite cheerful, but not inclined to talk much. Erections occurred almost every day, continuing several hours, and so perfect the day before he died, that the catheter was used with difficulty. The offensive odor of the dejections and urine, mentioned by writers upon injuries of the spine, was fully realized in this case. J. H. BLAKE.

Auburn, Me., Sept. 1, 1859.

TYPHOID FEVER IN THE VALLEY OF THE MOHAWK.

BY J. KELLY, M.D., OF ESPERANCE, N. Y.

[Communicated for the Boston Medical and Surgical Journal.]

HAVING been extensively acquainted with many different localities in the United States, I feel better able to consider and elucidate some points relating to this region.

In passing south from the Mokawk, a part of this region is elevated, being situated on the sources of different rivers, as the Schoharie, Delaware and Susquehanna. These eminences have usually a prospect east, and from some of the high elevations this reaches as far as to the Green Mountains in Vermont and Massachusetts. This eastern exposure makes us liable to chilly, easterly winds, sweeping over the Hudson and coming to us charged with humidity. Our section of country is generally free from diseases caused by malaria, not being very liable to intermittent fevers. Typhoid fevers have, at different times, committed great ravages, and seem to have taken on, at various periods, peculiar characters and aggravations. They have not usually appeared immediately on the Mohawk with as much severity as at places a little more elevated.

We have accounts given by our older physicians of a fever prevailing in the early settlement of this region, which was extensive, and was called an "epidemic;" and, as described by a physician of this village, an eye witness, was often most rapid and fatal. The disease, according to the best information I can obtain, was very much like the epidemic fevers prevailing from 1813 to 1822, in Virginia and New England; but it was somewhat different in different localities—assuming various names, as "yellow fever," "spotted fever," or "pneumonia typhodes." I feel inclined to describe, more particularly, that form of fever that has prevailed, at various places, through our region of country, since 1845. I have attended numerous cases, in the fourteen years past, in five different towns in this vicinity.

Sometimes it would take the form of ship fever, with bloody and very frequent discharges from the bowels; sometimes it was more, sometimes less inflammatory, but generally was of a low, muttering form, with more or less loss of intelligence; or of the form of pneumonia typhodes, or essentially typhoid, with perfect yellowness of the skin, as in yellow fever, and severe vomiting.

In the most marked cases there was pain in the head, often only in the fore part; confusion of ideas; want of appetite, or loathing of food; pain in the back; haggard look, or sunken and dingy complexion; lassitude, restlessness, sometimes sleeplessness; a disposition to move from side to side; quick, rather weak, and not tense pulse; usually looseness of the bowels, or if this should not be the case at first, and any laxative, even in a small dose, should be given, it would be likely to operate largely; and after this, if a minute dose should be given, it might operate enormously. The tongue, if not at first, would, in the course of the disease, be dark, brown and dry, sometimes with deep creases across it, and often much enlarged. The surface had a rose-colored rash after a little time, and usually an unnatural heat at first, but sometimes rather a coolness, and in many cases a continual moisture; in other cases, profuse sweating from the very commencement. The faculties of mind in many cases are nearly gone, and the patient thinks himself out of bed, or under the bed, or in some other village. Some had continual nausea, pain in stomach or bowels, or, at least, tenderness; others complained only of pain in the limbs, uneasiness and weakness. Epistaxis was frequent. A few complained only of the limbs and back.

The duration of the disease varied from a few days to nine weeks; a few cases even longer. They have been long sick, been extremely emaciated, and yet been completely restored, and a few have become more healthy than they were before their sickness.

To illustrate the disease more clearly, I will give one case more in detail, though, as it continued nine weeks before recovery, it will be tedious to describe it from day to day.

Miss C. G., aged 40, a school-teacher, was engaged, in the sum-

mer of 1851, in teaching, not far from the Schoharie Creek. Near the school-house was a house where the disease had commenced, about the last of September. Between that and the school-house was a small pond of water. Being seized with the fever, she was removed to her father's, about three miles off. She lost her usual appetite and strength, and had continual nausea, which lasted mostly for five or six weeks, rejecting nearly all nourishment, except a little crust water with loaf sugar and cream, and now and then a little lemonade. Most of her pain was in the back of the head, and in the lumbar region. One side of her face and ear would be red, and the rest of her face and her lips pale. Her tongue had, most of the time, a light coat on it, and was usually moist. Her pulse was quick. She complained of great internal heat, and almost continual faintness. Although her surface appeared to others rather cool, this heat and faintness were so great that she felt the necessity of having the windows open, night and day, though it was in the early part of November. She had a constant tendency to looseness of the bowels, and yet by most thorough attention she recovered and became quite healthy.

The exhaustion and debility of these cases totally forbid the use of emetics. To illustrate this, I will mention two cases. Two ladies, in the same family, not far from my residence, became sick. They were comfortable, and appeared to talk quite reasonably. One of them observed, "she thought herself not sick, but only tired." An aged physician prescribed an emetic, soon after I had seen them; immediately after the operation of which, they became very delirious, and in a few days died.

The first medicine I found of use, unless there was diarrhœa, was four grains of calomel and five of rhubarb; and after the operation, a fifth or an eighth of a grain of opium, with two grains of super-tartrate of potash, every three or four hours. I used sup. carb. of soda, spts. nitre, and gum Arabic, united so as to be pleasant, and given with a suitable quantity of water, every two or three hours, by the teaspoonful. Instead of physic, I often ordered clysters. Bathing, friction of the surface, and every means to make the patient comfortable, should be used. Also, valerian, and serpentaria Virginia, or stimulants, in small quantities, are useful. In most of the cases I was successful without any stimulants at all. If the tongue is dry and brown, it is an evidence that the glandular secretions are imperfect; then minute doses of hydrargyrum cum creta, or something of the kind, is called for, from time to time. They will moisten the tongue, render material benefit to the powers of life, and brighten the faculties of the mind very sensibly. If the fever has progressed for a time, with dry tongue, and tympanitic bowels, the glandular secretions locked up, diarrhœa, tenderness in the right iliac region, all showing ulceration, from five to fifteen drops of turpentine may be given every three or four hours. In such cases I have also used, with happy effect, a sixth

of a grain of nitrate of silver, united with burned powdered rhubarb, every six hours. These medicines act as tonics, as well as heal ulceration.

When the discharges from the bowels are frequent and bloody, enemata of a solution of nitrate of silver I have found very useful, used two or three times a day. Cases have come under my care where there is no great tendency to diarrhœa, but a tenderness of the bowels bordering on peritonitis, where blisters are useful, and also ground slippery elm and wheat-bran poultices may be of great use; and in such instances laxatives may be oftener required. If the tongue is red and glassy, with severe pain in the stomach, showing a high degree of inflammation in that organ, blisters will be useful applied to the epigastrium.

In conclusion, I observe, that my views may differ from those of others. I will simply say, that perhaps they have not seen the disease as I have. I find it described very nearly the same by Dr. A. Pratt, of the State of Michigan, as occurring there from 1853 to 1856. According to his account, given in the Peninsular Journal, of Detroit, many of the cases commenced and continued very nearly the same as here. Dr. Habersham, of London, describes the same characteristic symptoms in what he denominates "Typhoid disease of the intestines." The former author argues the point of there being lesion in the track of the bowels or in Peyer's glands. I have examined a case that showed a similar state of the duodenum, with enlarged mesenteric glands, and adhesions of the bowels to the left side. This patient had evidently labored under dyspeptic symptoms for a considerable time. He had dark-colored, sedimentous urine during his whole sickness; whereas, such a state of urine only exists usually in the first part of the fever. The latter author, Dr. Habersham, considers diseased glands, or ulceration, as usually a characteristic condition from the onset of the disease. He says, at the "commencement of the fever the glands appear to be swollen and enlarged, and the mucous membrane more vascular than usual."

If the actual ulceration exists only at Peyer's glands, the vascularity or subacute inflammatory action of the stomach and upper part of the small intestines render the process of digestion and assimilation imperfect, and this may have been so, in some instances, for a considerable time before the actual commencement of the fever, from improper diet or some other cause. Where there is ulceration, it appears evident, as Dr. Pratt observes, that "the lesion is the cause of the protracted stage of the fever." Passing through the various stages of inflammation, ulceration and healing must necessarily consume some considerable time. If such a state of the glands and intestines really prevails in this fever, and so much time is required to go through the process of healing and cure, then we should endeavor to use our best means "to preserve the patient, at the least expense of his constitution, up to

the time, when, by the natural laws of its action, the disease will spontaneously subside."

At the West, there are frequent causes of this disease, which are not perhaps looked for in other places. In some of their splendid villages, hot-beds of disease are to be found in those marshes where their cattle find pasturage, and these give bad milk, as well as impure, deadly poison to the air.

I have here traced the cause of the disease, in not a few instances, to foul, badly drained cellars, and to ponds. There is a locality in New Jersey, and also at Plaistow, in New Hampshire, where excavations were made to obtain material for making brick, leaving acres of land undrained, and continually covered with water. Around these, the typhoid fever has, at different periods, prevailed to an alarming extent. Like causes of the disease existed formerly in this village, which are now remedied, as they should be in other places. School-houses, seminaries and hospitals should not be located in the vicinity of stagnant water, which may bring disease and death to their inmates. In fact, any cause like this, that will bring on derangement of the organs of digestion and assimilation, should be guarded against, by every means possible, wherever it may be found.

Reports of Medical Societies.

EXTRACTS FROM THE RECORDS OF THE BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. BY F. E. OLIVER, M.D., SECRETARY.

JUNE 13th.—*Castration as a means of Cure for Satyriasis.* Dr. H. J. BIGELOW read the following letters, one from a physician in a neighboring State, requesting his opinion as to the propriety of castration in a case of erotic mania; and the other from Dr. BELL, containing his opinion as to the operation in this affection.

"*Sept. 27th*, 1856.

"Dr. H. J. BIGELOW,—You will confer a favor on me and my neighborhood if you will give me some information on the following case.

"There is a young man living near me who has been I suppose it might be called, partially deranged for nearly a year past; his mind runs altogether upon having sexual intercourse with females, and he grows worse. His conversation and thoughts are on that subject. He will attack any female he sees, and keeps himself indecently exposed when females are present. He is now worse than he was three months ago. He was at the Insane Hospital at ——— about four months, but came home worse than he was when he went. Application has been made to me with regard to castration. What do you think of it? I shall wait anxiously for an answer from you, and hope to get one by return of mail. I am, &c."

"P. S.—This young man is sane on other subjects, and will work on the farm some days; but most of the time he is wandering about, as he says, after the girls. At times he has violent fits of anger, and wants to kill every body he sees; but he remembers all about it after-

ward, and when talked to about it, says he will kill somebody if he can't get what he wants."

"*Monument Square, Charlestown, 9th Oct.* 1856.

"My Dear Sir,—I received your note per last post. I have often been consulted as to tying up the spermatic arteries, the vasa deferentia, and removal of the testes, in the forms of insanity connected with spermatorrhœa. I have known it done repeatedly. In one case, Dr. ——— castrated a clean gone onanist, who subsequently rallied, became an active 'man,' and the doctor told me that he never met him that he did not receive his blessing for the great favor he had conferred upon him. In another case of self-perpetrated castration, under a similar state of mind, with which I am acquainted, entire restoration to peace of mind and energy was produced.

"On the other hand, in all the lunatic hospital cases where I have known it done, no valuable results followed. At the Ohio Hospital, some years ago, it was tried on quite an extensive scale. No case of improvement followed. Indeed, Dr. Awl told me that in one patient, who previously was quiet and contented, a permanent and dangerous condition of irritability followed. He averred that 'they had done some d——d thing or other to him, so that things did n't work as they used to.'

"I knew the young woman you allude to, as Dr. ———'s patient. She eventually came to the McLean, and finished her wretchedness by suicide. I am satisfied that her disease was more cerebral than ovarial, and that nothing would have been gained by an operation of removing the ovaria.

"I confess that I should recoil from the kind of remedy suggested. I have found that heavy doses of opium, long continued, do control that nymphomaniacal disposition, dependent on no local irritation. And I should certainly desire to see this tried to its fullest extent before the other was decided on. A man so afflicted, ought, by every consideration of public safety, to be shut up in a lunatic hospital, and the laws are adequate to this end.

"I am, dear sir, very faithfully yours, L. V. Bell.

"*Dr. Bigelow.*"

In the case of the young woman referred to in the above letter, Dr. Bigelow had been consulted, by a distinguished physician of Boston, about the propriety of removing the ovaries in a desperate case of nymphomania.

Dr. Warren mentioned, in connection, the case of a young man, who performed castration on himself by first making an opening in the scrotum with a penknife, and then squeezing out the testicles. Immediately after the operation, the patient repaired to a restaurant and ate heartily of beefsteak, and subsequently attended a public meeting, and was in the act of making a speech, when he fainted. A surgeon was called, who, on examining the scrotum, found it greatly enlarged, and distended with blood. The coagula being removed, a vessel was tied, and he was removed to the Hospital.

Dr. Warren saw him on the following day. There was no farther hæmorrhage, and he recovered rapidly, without any bad symptom.

He quoted scripture in defence of his course, and did not regret it.

THE BOSTON MEDICAL AND SURGICAL JOURNAL.

BOSTON, SEPTEMBER 22, 1859.

THE LEGISLATURE OF MAINE AND THE STUDY OF ANATOMY.—The Legislature of the State of Maine has recently granted one half township of land, "of average quality," to the Maine Medical School, to be applied "to the promotion of the sciences of anatomy and surgery," provided the institution "will receive and graduate all students who pass the required examinations, without reference to where such student may have studied previous (*sic*) to asking admission to said institution, or what mode of practice such student intends to pursue after receiving his diploma." The common sense of the Maine Legislature appears to be about on a level with its grammar. One would think the medical profession was composed of men of sufficient intelligence and character to be able to decide for themselves as to the best method of educating students, and what precautions are best calculated to prevent a horde of quacks from being let loose upon society to swell the throng that already fatten upon it; but the Legislature of Maine has thought otherwise, and has affixed an insulting condition to a grant in aid of an institution whose only object is to provide suitable medical men to supply the wants of the community. The precaution of the Maine Legislature is entirely superfluous. How can a Medical School refuse to admit a student because he has studied with this or that practitioner, or this or that institution? Or how can a School refuse to graduate a student who has faithfully attended lectures, and who has passed a creditable examination, because he intends to practise according to this or that system? It is far different in a Medical *Society*, whose members have a perfect right to exclude from fellowship those who practise quackery, or who avow their intention of so doing; but if an individual fulfils all the requirements of a School, there is no legal way of refusing to give him a diploma.

The absurdity and inconsistency of the Maine Legislature have already been exposed by us. There is no law in that State legalizing the study of practical anatomy, yet a surgeon ignorant of it may become liable for malpractice; and now the climax of contradiction is accomplished by the Resolve under consideration, which grants half a township of land toward the support of the sciences of anatomy and surgery! It is a crime to dissect; it is a crime not to know what can only be learned by dissection; the government grants support to a professorship of anatomy and surgery, and thus aids and abets the dissection of human bodies, which by another law is a crime!

DISGRACEFUL ENCOUNTER BETWEEN TWO PHYSICIANS.—The profession has been insulted by a most disgraceful scene between two surgeons, at New Orleans. Dr. John D. Foster and Dr. Samuel Choppin, both attached to the Charity Hospital, got into a fight on the 27th of August, over a patient who applied to have the operation of tying the subclavian artery performed. After an interchange of injurious and profane language, they drew pistols and fired several shots at each other, whereby Dr. Choppin fell, dangerously wounded in the neck and hip. They were about finishing the fight with knives, when they were separated, like dogs, by the by-standers. What became of the unfortunate patient, we are not inform-

ed, but we think he will be slow in trusting himself again in the hands of such murderous practitioners. Dr. Foster was arrested, but was subsequently released on bail in the sum of $5000.

PUBLIC URINALS.—We have more than once insisted upon the importance of public urinals, as aids to public health and public morality, and as of the greatest public convenience. One would think, so great has been the opposition to them, that no one ever felt the want of such conveniences, and one is reminded of the witticism applied to a great anatomist by another who differed from him in some point concerning the physiology of defecation: *Ast credo Astruciam nunquam caccasse!* On Monday night, however, the Board of Aldermen passed an order providing for the erection of a number of these conveniences, in various parts of the city, for which they will doubtless receive the thanks of the community.

SUICIDES IN AUGUST.—The *New York Times* records twenty-seven instances of suicide, which occurred in this country during the past month. Eight of these were by poison, seven by shooting, six by drowning, three by hanging, and others by cutting the throat. There were numerous instances of unsuccessful attempts at self-destruction.

HEALTH OF THE CITY.—We are happy to see a decided diminution in the number of deaths from cholera infantum, only 11 having been recorded last week. The various items of mortality are rather at variance with their usual number; thus we have 10 deaths from dropsy in the head, 5 from inflammation of the bowels, 7 from casualties, 4 from scarlatina, 6 from dysentery, and only 8 from consumption. Of the three smallpox patients, 1 was an adult, and two were children under 5 years. Of the whole number of deaths (93), 45 were of children under 5 years. The number of deaths for the corresponding week of 1858, was 83, of which 18 were from cholera infantum, 14 from consumption, 3 from scarlatina, 3 from dropsy in the head, and 5 from casualties.

SANITARY CONDITION OF CHARLESTON, S. C.—Our city has enjoyed such a season of perfect and uninterrupted health this summer, as, within the recollection of our oldest practitioners, has no parallel. Not only have we been spared any epidemic visitation, but not even a single case of yellow fever has been brought into our harbor. Moreover, the mortality from all causes has been unprecedentedly low, and as the summer is now far advanced, and our city in a tolerably satisfactory condition, as regards all the supposed agents or adjuvants of pestilential disease, we may reasonably hope, with the blessing of God, to preserve this happy condition.—*Charleston Med. Jour. & Rev.*

HEALTH OF SAVANNAH.—It will be seen by the tables of mortality published in our Journal for the past four months, that our city has been blessed with excellent health. Indeed it has been remarked by all of our physicians, that our city has rarely ever been so exempt from fevers of every description. What few fevers we have had were of the intermittent and remittent types. July was even more healthy than the previous four months.—*Savannah (Geo.) Jour. of Med.*

HEALTH OF ST. JOSEPH, MO.—The Journal of Medicine published at this place observes: "The prevailing diseases this summer have been typhoid, solar remittent, bilious remittent, and intermittent fevers. There has been a good deal of bowel complaint, both among children and adults, but no well marked case of cholera has occurred."

DIED,—On the 16th of July, at the Hot Springs, Va., Dr. James P. Screven.

Deaths in Boston for the week ending Saturday noon, Sept. 17th, 93. Males, 44—Females, 49.—Accident, 3—inflammation of the bowels, 5—inflammation of the brain, 1—burns, 2—cancer, 2—consumption, 8—cholera infantum, 11—croup, 2—dysentery, 6—diarrhœa, 2—dropsy, 2—dropsy in the head, 10—debility, 1—puerperal disease, 1—erysipelas, 1—scarlet fever, 4—typhoid fever, 2—gravel, 1—homicide, 1—disease of the heart, 3—intussusception, 1—congestion of the lungs, 1—disease of the liver, 1—marasmus, 1—old age, 1—premature birth, 1—purpura, 1—disease of the spine, 1—smallpox, 3—suicide, 1—teething, 3—tetanus, 1—thrush, 2—unknown, 4—whooping cough, 3.

Under 5 years, 45—between 5 and 20 years, 7—between 20 and 40 years, 15—between 40 and 60 years, 7—above 60 years, 19. Born in the United States, 64—Ireland, 26—other places, 3.